

WHAT IS CLAIMED IS:

1. A slide-out mechanism for controllably moving a slide-out section that is
5 associated with a vehicle comprising:

a pair of first guide members that are operatively coupled to the slide-out section,
each of the first guide members having a plurality of first drive features formed as a part thereof;
and

a pair of second guide members that are disposed on an outer surface of a pair of
10 opposite side walls of the slide-out section, each second guide member having a plurality of second
drive features formed is a part thereof; and

a drive mechanism having a pair of first drive members that complement and
engage the first drive features and a pair of second drive members that complement and engage the
second drive features for controllably moving the slide-out section between a retracted position and
15 an extended position as the first drive members engage successive first drive features under action
of the drive mechanism, wherein the second drive members are operatively coupled to the first
drive members so that movement of the first drive members is translated into movement of the
second drive members resulting in the first guide members and the second guide members being
driven together resulting in the slide-out section being driven between the retracted position and the
20 extended position.

2. The slide-out mechanism of claim 1, wherein the first drive features
comprise a plurality of slots arranged linearly along a surface of the first guide member.

3. The slide-out mechanism of claim 1, wherein the first drive features comprise a plurality of ribs arranged linearly along a surface of the first guide member.

5 4. The slide-out mechanism of claim 1, wherein the pair of first guide members are arranged on an underside of a floor of the slide-out section.

5. The slide-out mechanism of claim 1, wherein each of the guide members comprises an elongated bracket having one face that includes a recessed floor section formed
10 between a pair of planar land sections that lie flush against a surface of the slide-out section, the first drive features being formed in the recessed floor section.

6. The slide-out section of claim 1, wherein one of the first guide members is disposed on an underside of a floor of the slide-out section at an intersection between one side wall
15 and the floor while the other first guide member is disposed on an underside of the floor at an intersection between the other side wall and the floor.

7. The slide-out section of claim 6, wherein the first guide member is in the form of an L-shaped bracket with a horizontal section being disposed against the underside of the
20 floor and a vertical section is disposed against one side wall of the slide-out section.

8. The slide-out mechanism of claim 1, wherein each of the second guide members comprises a guide track that is securely coupled to one side wall of the slide-out section

and the second drive features comprise a plurality of slots formed linearly along one face thereof, wherein the drive mechanism further includes a pair of rotatable gears that engage the slots and are operatively coupled to the first drive member such that the first drive members and the gears rotate together.

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9. The slide-out section of claim 1, wherein the slide-out section is a closet extension that is disposed within an enclosed section of a closet provided in a main cabin of the vehicle such that the first guide members are disposed within a recessed section of a floor of the closet of the main cabin underneath a floor of the slide-out section.

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10. The slide-out section of claim 9, wherein the closet includes a pair of opposing side walls that extend up from the floor and the slide-out section further includes a pair of opposing side walls that face the side walls of the closet and extend between the floor and a ceiling of the side-out section and a rear wall that extends between the side walls and the floor and ceiling, the rear wall acting as an exterior wall of the main cabin.

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11. The slide-out mechanism of claim 1, wherein each of the first drive members comprises a rotatable gear that is disposed in a fixed relation to the slide-out section, the rotatable gear meshing with the first drive features such that rotation of the gear causes advancement of the guide member, thereby causing the slide-out section to be driven to one of the extended position and the retracted position.

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12. The slide-out mechanism of claim 1, wherein the drive mechanism includes an actuatable motor that can be driven in a first direction and a second direction, wherein driving the motor in the first direction causes rotation of the first drive members in a first direction resulting in the slide-out section being driven to the extended position and driving the motor in the second direction causes rotation of the first drive members in a second direction resulting in the slide-out section being driven to the retracted position.

13. The slide-out mechanism of claim 1, wherein the first drive members are in the form of toothed gears that are connected to one another by a drive shaft which extends transversely across the slide-out section, wherein rotation of the toothed gears is translated into axial movement of the slide-out section.

14. The slide-out section of claim 1, wherein the drive mechanism includes a pair of opposing vertical frame assemblies that are disposed proximate to an opening formed in an exterior wall of the recreational vehicle through which the slide-out section extends and retracts, one of the first drive members being associated with one vertical frame assembly, while the other first drive member is associated with the other vertical frame assembly.

15. The slide-out section of claim 14, wherein each vertical frame assembly includes an elongated support member that has a first end and an opposing second end that is proximate one of the first drive members and a vertical shaft that extends substantially from the first end to the second end of the support member, the first end of the vertical shaft supporting the second drive member that cooperatively engages the second drive features associated with one of

the second guide members, the second end of the vertical shaft having a first drive gear that is operatively coupled to a second drive gear that is connected to a main drive shaft that supports and extends between the first drive members, whereby rotation of the main drive shaft is translated into rotation of the vertical shaft through the first and second drive gears.

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16. The slide-out mechanism of claim 15, wherein each of the second drive members comprises a toothed gear that meshes with the second drive features that are in the form of slots formed linearly in the second guide member.

10 17. The slide-out mechanism of claim 15, wherein the main drive shaft is operatively connected to a motor whose actuation is translated into rotation of the main drive shaft in one of two rotational directions.

15 18. The slide-out mechanism of claim 15, wherein the vertical shaft includes a pair of rollers that are disposed adjacent the second drive member and the first drive gear, one roller being in contact with the second guide member, while the other roller being in contact with the first guide member to facilitate movement of the slide-out section.

20 19. The slide-out mechanism of claim 15, wherein the main drive shaft includes at least two roller disposed adjacent the first drive members and being in contact with an underside of a floor of the slide-out section to facilitate sliding thereof.

20. The slide-out mechanism of claim 15, wherein the support member is a C-shaped bracket that at least partially surrounds the vertical shaft.

21. The slide-out mechanism of claim 1, wherein the drive mechanism includes an active drive assembly associated with one corner of the slide-out section and a passive assembly associated with an opposite corner of the slide-out section, the passive assembly being operatively connected to the active drive assembly so that drive action of the active assembly is translated to the passive assembly.

22. The slide-out mechanism of claim 1, wherein the drive mechanism includes (a) a transverse drive shaft with one of the first drive members being proximate one end of the transverse drive shaft and the other first drive member being proximate the other end of the transverse drive shaft; (b) a pair of first coupling gears disposed at the first and second ends of the transverse drive shaft; (c) a pair of vertical drive shafts disposed at the first and second ends of the transverse drive shaft, with each vertical drive shaft including a second coupling gear that mates with one first coupling gear so that rotation of the transverse drive shaft is imparted into rotation of the vertical drive shaft; and wherein the pair of second drive members are coupled to the vertical drive shafts and operatively engage the second guide members such that rotation of the vertical drive shafts is translated into axial movement of the second guide members resulting in the slide-out section being moved.

coupling a pair of first guide members to the slide-out section, each of the first guide members having a plurality of first drive features formed as a part thereof;

coupling a pair of second guide members to opposing side walls of the slide-out section, each of the second guide members having a plurality of second drive features formed as a part thereof;

providing a drive mechanism that has a pair of first drive members that are complementary to the first drive features, the first drive members being disposed in a fixed location relative to the movable first guide members and a pair of second drive members that are operatively coupled to the first drive members such that rotation of the first drive members is translated into rotation of the second drive members;

engaging the first drive members to the first drive features and the second drive members to the second drive features; and

rotating the first drive members to cause them to engage successive first drive features to cause rotation of the second drive members which results in the second drive members engaging successive second drive features, thereby driving the second guide members, along with the first guide members, which results in the slide-out section being driven to one of an extended position and a retracted position.

29. The method of claim 28, wherein the step of coupling the first guide members comprises:

securely mounting the first guide members to an underside of a floor of the slide-out section.

30. The method of claim 28, wherein the drive mechanism is disposed underneath and to the sides of the slide-out section.

31. The method of claim 28, wherein the first drive members comprise first toothed sprockets that are axially fixed relative to the first guide members and the slide-out section and the step of rotating the first drive members comprises the steps of:

rotating a transverse drive shaft that carries the first sprockets such that the teeth of the first sprockets engage successive slots or ribs formed in the first guide members to drive the slide-out section.

32. The method of claim 31, wherein the second drive members comprise second toothed sprockets that are axially fixed relative to the second guide members and the slide-out section and the step of rotating the second drive members comprises the steps of:

rotating a pair of spaced vertical drive shaft that are operatively coupled to ends of the transverse drive shaft such that rotation of the transverse drive shaft is translated into rotation of the vertical drive shafts, the vertical drive shafts carrying the second sprockets such that the teeth of the second sprockets engage successive slots or ribs formed in the second guide members to drive the slide-out section.

33. A sliding mechanism for extending and retracting a slide-out section of a recreational vehicle having a support portion, the sliding mechanism comprising:

a first side assembly comprising a first track and a first gear assembly;

a second side assembly comprising a second track and a second gear assembly; and

a drive shaft connecting the first gear assembly and the second gear assembly;

wherein the first track and the second track are coupled to the slide-out section, the

first track and the second track being configured to allow the slide-out section to move relative to

5 the first gear assembly and the second gear assembly as a result of the first gear assembly and the

second gear assembly being configured to drivingly engage the first track and the second track so

as to extend or retract the slide-out section.

34. A sliding mechanism for extending and retracting a slide-out section of a

10 recreational vehicle having a support portion, the sliding mechanism comprising:

a frame assembly mounted to the support portion;

an upper track coupled to an upper portion of the slide-out section; the upper track
being configured to allow the slide-out section to move relative to the frame assembly;

an upper gear assembly mounted in the frame assembly and configured to drivingly
15 engage the upper track so as to extend or retract the slide-out section;

a lower track disposed on a lower portion of the slide-out section; the lower track
being configured to allow the slide-out section to move relative to the frame assembly;

a lower gear assembly mounted in the frame assembly and configured to drivingly
engage the lower track so as to extend or retract the slide-out section; and

20 wherein the upper gear assembly and said lower gear assembly are powered by a
single drive mechanism.

35. The sliding mechanism from claim 34, wherein the upper and lower tracks are substantially perpendicular to one another.